

What is claimed is:

1. An optical crossconnect device comprising:  
an optical switch circuit, and

a supplying means for supplying a signal of monitoring the optical switch circuit to the optical switch circuit in unit of wavelength, wavelength group or optical fiber if an optical level of the optical signal in unit of wavelength, wavelength group or optical fiber supplied to an optical transmission signal input portion of the optical crossconnect device is the predetermined level or less.

2. An optical crossconnect device comprising:  
an optical switch circuit,

an input optical level monitoring means for monitoring an optical level of an optical signal supplied an optical transmission signal to input portion of the optical crossconnect device,

a monitoring signal generating means for generating a monitoring signal for monitoring the optical switch circuit,

an input optical signal selecting means for providing between the optical transmission signal input portion and the optical switch circuit, to select the monitoring signal generated by the monitoring signal generating means or the optical signal supplied to the optical transmission signal input portion in order to

supply the selected signal to the optical switch circuit,  
and

an input optical signal controlling means for  
controlling the input optical signal selecting means  
based on an output of the input optical level monitoring  
means.

3. An optical crossconnect device as recited in claim  
2, wherein the optical switch circuit is monitored based  
on an output of the output optical level monitoring means.

4. An optical crossconnect device as recited in claim  
3, further comprising:

an output cut-off means for cutting off the monitoring  
signal provided between the optical switch circuit and  
the optical transmission signal output portion of the  
optical crossconnect device, and

an output optical signal controlling means for  
controlling the output cut-off means based on an output  
of the input optical level monitoring means.

5. An optical crossconnect device as recited in claim  
4, wherein the output cut-off means includes an output  
destination selecting means provided with two or more  
output terminals for one input terminal.

6. An optical crossconnect device as recited in 3,  
wherein an optical switch controlling means for  
controlling connection between non-used input ports and  
non-used output ports of the optical switch circuit.

7. An optical crossconnect device comprising:

an optical switch circuit for switching operation in unit of wavelength group,

a multiplexing means for multiplexing optical signals in unit of waveguide to output the optical signals of wavelength group, and

a monitoring signal generating means for monitoring a monitoring signal, to monitor the optical switch circuit, of the wavelength which is different from the wavelength of an input optical signal supplied an optical transmission signal to input portion of the optical crossconnect device, wherein the multiplexing means multiplexes an optical signal of the monitoring signal generated by the monitoring signal generating means and an optical signal in unit of wavelength supplied to the optical transmission signal input portion and supplies the multiplexed optical signals of the wavelength group to the optical switch circuit.

8. An optical crossconnect device as recited in claim 7, wherein the monitoring signal generating means includes a monitoring signal wavelength converting means for converting the wavelength of the monitoring signal and wavelength converting means converts the wavelength of the monitoring signal outputted from the monitoring signal generating means to the wavelength which is different from that of the input optical signal.

9. An optical crossconnect device as recited in claim

7, further comprising an input signal wavelength converting means for converting the wavelength of the optical input signal is provided between the optical transmission signal input portion and the multiplexing means.

10. An optical crossconnect device as recited in claim 7, further comprising:

a demultiplexing means for demultiplexing the optical signal outputted from the optical switch circuit is provided between the optical switch circuit, and wherein the optical transmission signal output portion of the optical crossconnect device and the demultiplexing means demultiplexes the monitoring signal.

11. An optical crossconnect device comprising:

an optical switch circuit for switching operation in unit of wavelength group,

a multiplexing means for multiplexing optical signals in unit of wavelength to output optical signals of wavelength group,

a monitoring signal generating means for generating a monitoring signal, to monitor the optical switch circuit, of the equal wavelength to the wavelength of an input optical signal supplied to an optical transmission signal input portion of the optical crossconnect device,

an input optical level monitoring means for

monitoring an optical level of the input optical signal of the same wavelength as the monitoring signal supplied the optical transmission signal to the input portion of the optical crossconnect device, and

a monitoring signal controlling means for controlling the monitoring signal generating means based on an output of the input optical level monitoring means, wherein the multiplexing means multiplexes an optical signal of the monitoring signal generated by the monitoring signal generating means and an optical signal of the optical signal in unit of wavelength supplied to the optical transmission signal input portion and then supplies the multiplexed optical signal of wavelength group to the optical switch circuit.

12. An optical crossconnect device as recited in claim 11, wherein the monitoring signal generating means includes the monitoring signal wavelength converting means for converting the wavelength of the monitoring signal and the wavelength of the monitoring signal outputted from the monitoring signal generating means is converted by the wavelength converting means to the wavelength which is equal to the wavelength of the optical input signal.

13. An optical crossconnect device as recited in claim 11, wherein said input signal wavelength converting means for converting the wavelength of the input optical signal is provided between the optical transmission

signal input portion and the multiplexing means.

14. An optical crossconnect device as recited in claim 11, wherein the demultiplexing means provided between the optical switch circuit and the optical transmission signal output portion of the optical crossconnect device demultiplexes the optical signal outputted from the optical switch circuit and the demultiplexing means also demultiplexes the monitoring signal.

15. An optical crossconnect device as recited in claim 14, wherein the output cut-off means provided between the demultiplexing means and the optical transmission signal output portion of the optical crossconnect device to cut off the monitoring signal demultiplexed by the demultiplexing means and the output optical signal controlling means for controlling the output cut-off means based on an output of the input optical level monitoring means.

16. An optical crossconnect device as recited in claim 15, wherein said output cut-off means includes the output destination selecting means provided with two or more output terminals for one input terminal.

17. An optical crossconnect device as recited in claim 10, further comprising an optical switch controlling means for controlling connection between the non-used input ports and non-used output ports of the optical switch circuit.

18. A monitoring method of the optical crossconnect

device including an optical switch circuit comprising, supplying a monitoring signal for monitoring the optical switch circuit to the optical switch circuit in unit of wavelength, wavelength group or optical fiber when an optical level of the optical signal in unit of wavelength, wavelength group or optical fiber supplied to the optical transmission signal input portion of the optical crossconnect device is the predetermined level or less.